Marine Panel Computer

USERS MANUAL

Version: 1.0

R15IV3S-MRXX	15.0 inch Marine Bridge Panel PC System
R19IV3S-MRXX	19.0 inch Marine Bridge Panel PC System

REVISION HISTORY

REVISION	AUTHOR	DATE	DESCRIPTION
1.00	Marc Tsai	June. 4, 2013	First version release

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IMPORTANT SAFETY INSTRUCTIONS

Please read these instructions carefully before using the product and save for later reference.

Follow all warnings and instructions marked on the product.

Unplug this product from the wall outlet before cleaning. Clean the product with a damp soft cloth. Do not use liquid or aerosol cleaners as it may cause permanent damage to the screen.

Do not use this product near water.

Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.

This product should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.

This product is equipped with a 3-wire grounding type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. (For AC version only) Do not defeat the purpose of the grounding-type plug.

Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.

Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.

Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage points or other risks and will void the warranty. Refer all servicing to qualified service personnel.

Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

When the power cord or plug is damaged or frayed.

If liquid has been spilled into the product.

If the product has been exposed to rain or water.

If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.

If the product has been dropped or the cabinet has been damaged.

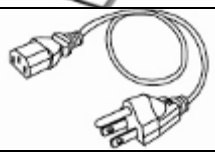
If the product exhibits a distinct change in performance, indicating a need for service.

Packaging List

This product is shipped with the items list below. Please make sure that all are in your package.

Item	Description	Note
	1 pcs of Users Manual.	
	1 pcs of CD for Mainboard Driver Utility.	
	4 pcs of M6 x 30 black screw bolt with M6 nut. **Notice: Only be used to screw the display into a console.** If you prefer your own bolts, please make sure to use M6 and 30mm in length.	10.4 inch above display use.
	M4 x 15 black screw bolt. **Notice: Only be used to screw the display into a console from the rear side.** If you prefer your own bolts, please make sure to use M4 and 30mm in length.	10.4” 12.1”; 12 pcs for 15”; 16 pcs for 17”, 19”, use.

Optional Accessories

Item	Description	Note
	1 pcs of CD for Recovery CD for Operation System (Windows 7).	Optional with Windows 7 pre-installed.
	1 pcs of Windows 7 Recovery Users Guide.	Optional with Windows 7 pre-installed.
	1 pcs of Standard Power Cord. Euro / U.S. Std type, 1.8m	Optional AC version of display use default.

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CHAPTER 1
General Information

Chapter 1 General Information

The Marine Grade Ivy Bridge Panel PC is high performance Panel PC with HM76 chipset combine with a TFT LCD Panel. Design with transflective panel, dimming brightness, ease of use OSD front panel control, IP65 proof, high quality touch-screen, wide voltage range power input acceptable, and anti-corrosion protection. Born to the demands of marine applications as navigation, ship automation, and surveillance, rugged industrial and light military applications.

All product designs follow IEC-60945 Maritime Navigation and Radio-communication Equipment and Systems requirements.

1.1 Features about the Marine Bridge System Display

Here are features of Marine Panel PCs:

Hyper Dimming

Our displays use hyper dimming technology that can control backlight brightness linearly from nearly 0% to 100% by a dimming knob. In the night vision it's very suitable for marine applications.

High Brightness (Optional)

Our extraordinary high brightness technology enhances visibility for Marine outdoor or bright ambience environment. (Outdoor readability please take reference to **Appendix B**)

Anti-corrosion IP Proof

The Marine displays design with panel (flush) mount IP65 aluminum housing with powder coating design achieve the anti-corrosion proof in harsh conditions.

Wide Voltage Input Range Power Input

For marine and transportation power source characteristic, our displays use wide voltage range from 9 to 36V input acceptable. 24V is the only voltage approval by DNV certification.

Touch-screen / Anti-reflection Protection Glass

We develop highly compatible mechanical design for each type. Customers can choose high quality SAW touch-screen, 5 wire resistive touch-screen, or even anti-reflection protection glass for option.

High Efficiency CPU with Versatile Functions

The Marine Panel PC integrated with Ivy Bridge Intel Core i7-3555LE 2.5GHz CPU and HM76 Chipset that delivers the most performance per watt available in embedded computing systems. It's a PC-based system with DDR3 RAM, VGA or HDMI/LCD controller, multi-COM port interface, and on-board 10/100/1000 Mbps Ethernet. The Marine Panel PC supports 1 Mini-PCIe slot for function upgrade. It is a compact design to meet the demanding performance requirements of Marine applications.

IP65 OSD Front Panel Design

With IP65 water-dust front bezel proof, the Marine Panel PCs use easy to use front panel OSD control with power on/off and reset function. And also power and storage status LED indicators. It's very convenience and intelligent design for all marine users.

Anti-Shock and Vibration

With anti-vibration and shock mechanical design makes our Panel PC solution enhanced shock and vibration resistance.

Customize your marine products

Base on our well-experience module competence, we can do very flexible and tailor-made design fulfilling any of customer's solution. For different panel characteristics, mechanical design, and electronic component, we can make it for you.

Approved Marine Panel PC

Winmate Marine Panel PC design is followed **IEC-60945 Maritime Navigation and Radio-communication Equipment and Systems requirements.**

The Marine Panel PC series consists wide range sizes from 10.4 inches to 24 inches. By testing for usability in a ship's wheelhouse during different ambient light conditions. All these models can fulfill most of the demands in maritime applications especially for navigation, ship automation and maritime surveillance.

About this Manual

The users' manual introduces basic information about the product, electrical, mechanical and input / output signal specifications. All specification is subject to change without prior notice due to manufacturing reasons. Check in the "Revision History" in front page of this manual for any update reference.

1.2 Basic Construction of Marine Panel PC

The state of the art modulized technology can integrate all marine display components flexibly.

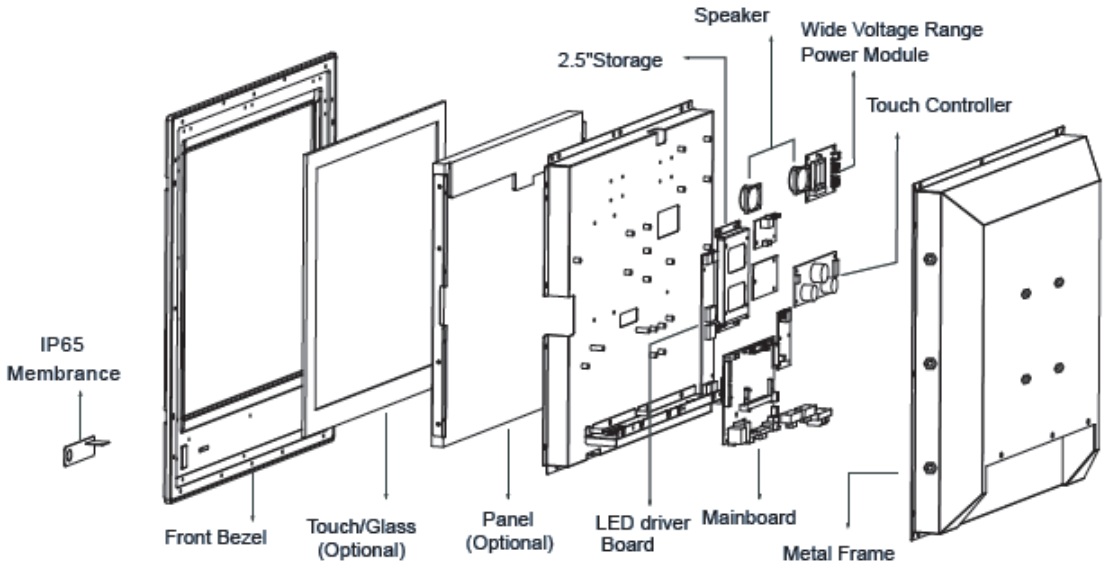


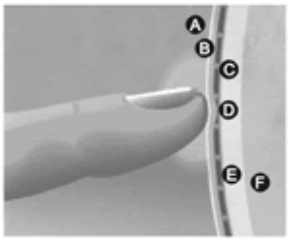
Figure 1.1 Basic Construction

1.3 Touch Screen Solution (Optional)

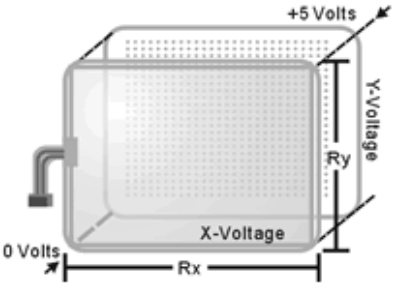
1.3.1 Five-Wire Resistive Touch screen (Optional 1)

Introduction to Five-Wire Resistive Touch screen

The five-wire resistive touchscreens use a glass panel with a uniform resistive coating. A thick polyester coversheet is tightly suspended over the top of the glass, separated by small, transparent insulating dots. The coversheet has a hard, durable coating on the outer side and a conductive coating on the inner side.



A Durable hard coat
B Cover sheet
C Separator dot
D Resistive coating
E Glass panel
F CRT



When the screen is touched, the conductive coating makes electrical contact with the coating on the glass. The voltages produced are the analog representation of the position touched. The controller digitizes these voltages and transmits them to the computer for processing. The five-wire technology utilizes the bottom substrate for both X and Y-axis measurements. The flexible coversheet acts only as a voltage-measuring probe. This means the touchscreen will continue working properly even with non-uniformity in the cover sheet's conductive coating. The result is an accurate, durable and reliable touchscreen that offers drift free operation. The touchscreens are sealed against contamination and moisture. The coversheet is sealed to the glass substrate with an industrial grade caulk. This prevents wicking of fluid between the coversheet and glass. Also, the touchscreens are not air vented, thereby preventing fluid ingress through an air vent.

Brief Specifications

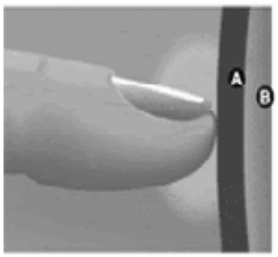
Subject	Details
Input Method	Finger, gloved hand, or stylus activation
Positional Accuracy	Standard deviation error is less than 0.080 (2 mm)
Resolution	Touch point density is based on controller resolution of 4096 x 4096
Touch Activation Force	Typically less than 4 ounces (113 grams)
Light Transmission	HL products: 80% +/–5% at 550 nm wavelength Enhanced products: 60% +/–5% at 550 nm wavelength

Update touch-screen driver or new information. Go to www.elotouch.com

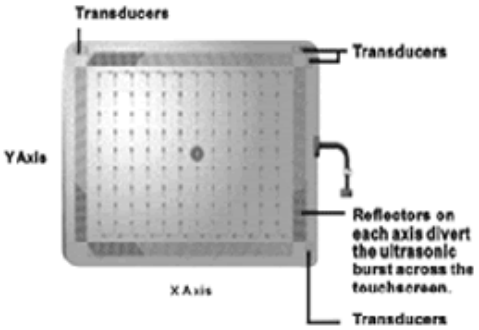
1.3.2 Secure Touch Surface Wave Touch screen (Optional 2)

Introduction to SAW Touch screen

The surface wave is the optical standard of touch. Its pure glass construction provides superior optical performance and makes it the most scratch-resistant technology available. It's nearly impossible to physically "wear out" this touchscreen.



A Glass touchscreen
B CRT



The touch have a glass overlay with transmitting and receiving piezoelectric transducers for both the X and Y axes. The touchscreen controller sends a five-megahertz electrical signal to the transmitting transducer, which converts the signal into ultrasonic waves within the glass. These waves are directed across the front surface of the touchscreen by an array of reflectors. Reflectors on the opposite side gather and direct the waves to the receiving transducer, which reconverts them into an electrical signal—a digital map of the touchscreen surface.

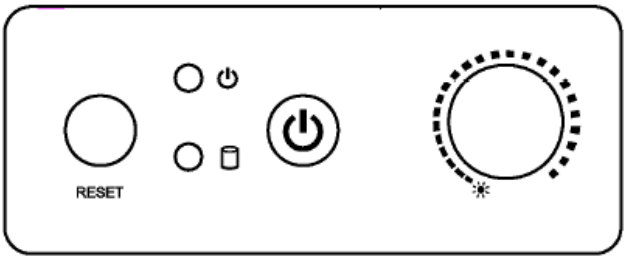
When you touch the screen, you absorb a portion of the wave traveling across it. The received signal is then compared to the stored digital map, the change recognized, and a coordinate calculated. This process happens independently for both the X and Y axes. By measuring the amount of the signal that is absorbed, a Z-axis is also determined. The digitized coordinates are transmitted to the computer for processing.

Brief Specifications

Subject	Details
Input Method	Finger or gloved hand (cloth, leather, or rubber) activation
Positional Accuracy	Standard deviation of error is less than 0.080 in. (2 mm)
Resolution	Touch point density is based on controller resolution of 4096 x 4096, plus 255 levels corresponding to touch pressure
Touch Activation Force	Typically 2 to 3 ounces (55 to 85 grams)
Light Transmission	Up to 90% per ASTM D1003-92

Update touch-screen driver or new information. Go to www.elotouch.com

CHAPTER 2
Installation

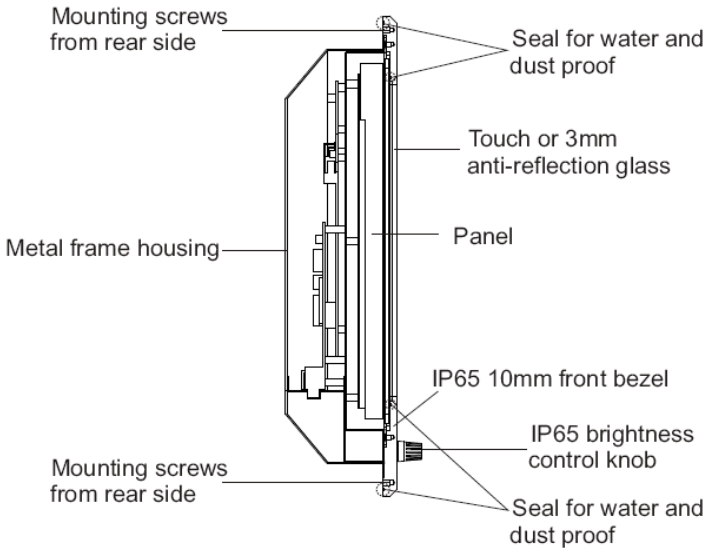


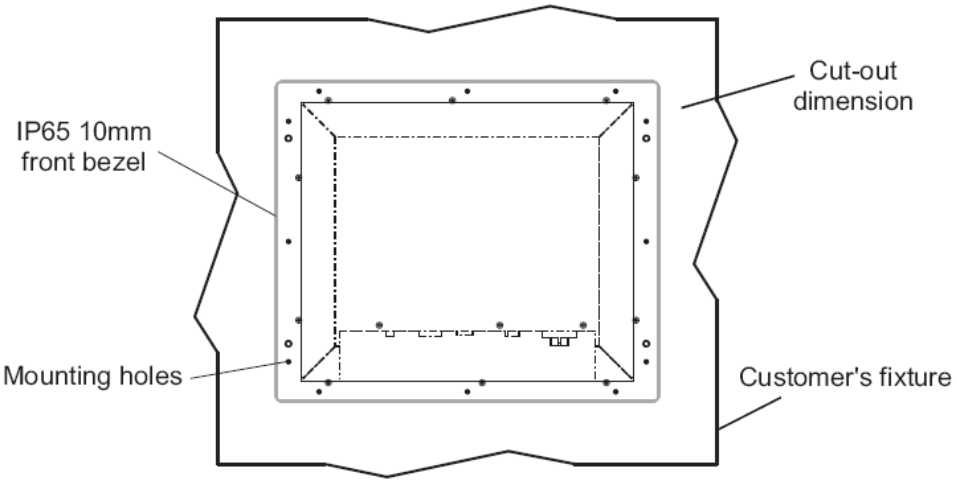
Chapter 2 Installation

2.1 General installation

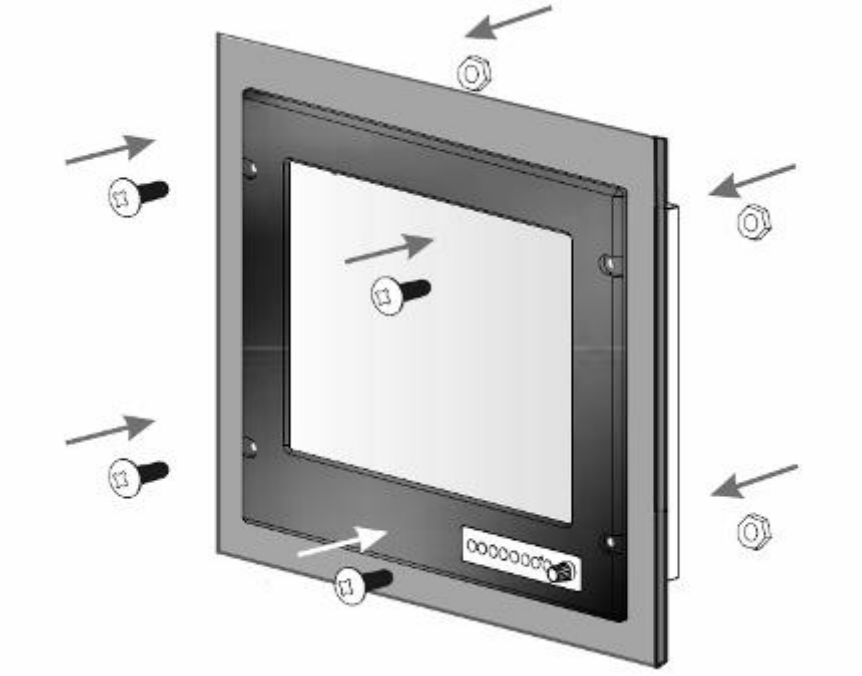
The Marine Panel PC can be applied for several different installation methods. Including panel (flush) mounting, bracket mounting, ceiling / wall mounting…etc. For panel (flush) mounting is normally for a ship's wheelhouse use, it's easy to follow few steps to fix the display product in customer's fixture.

Check the mechanical and mounting concept as below first. The fixture cut-out dimension and mounting holes based on drawing.

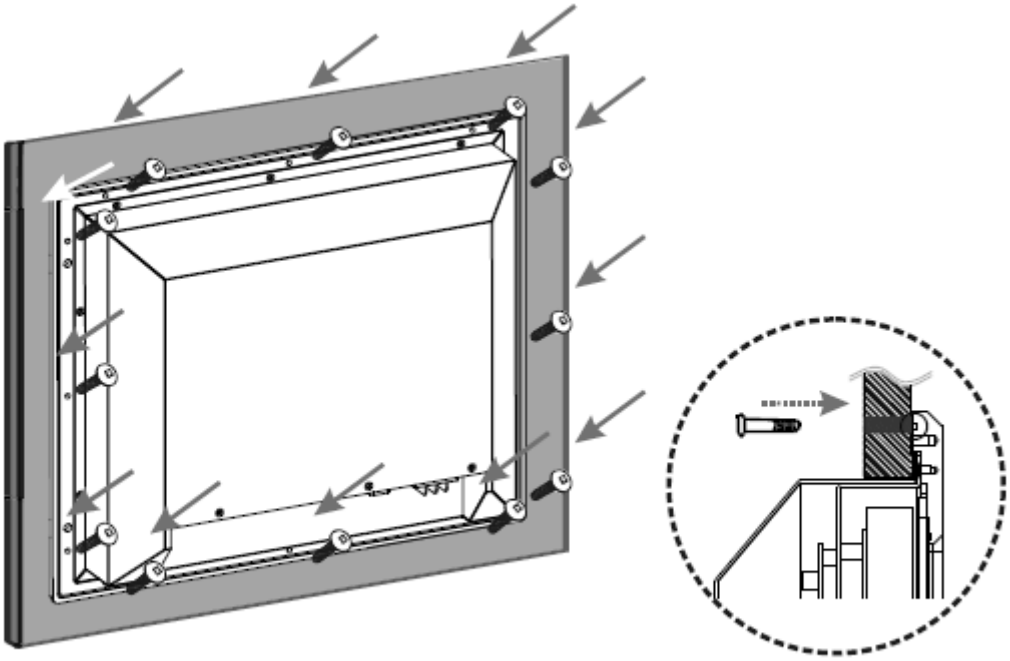

Mounting screws from rear side
Seal for water and dust proof
Touch or 3mm anti-reflection glass
Metal frame housing
Panel
IP65 10mm front bezel
IP65 brightness control knob
Mounting screws from rear side
Seal for water and dust proof



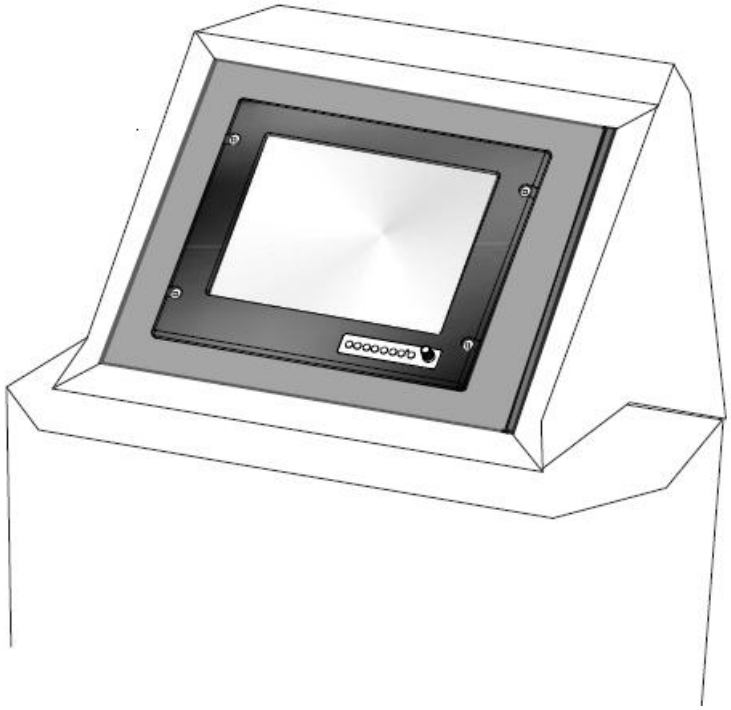
Step1. Put the marine product on the fixture (console) from the front, and screw by four M6 x 30 mm black bolts with nuts.



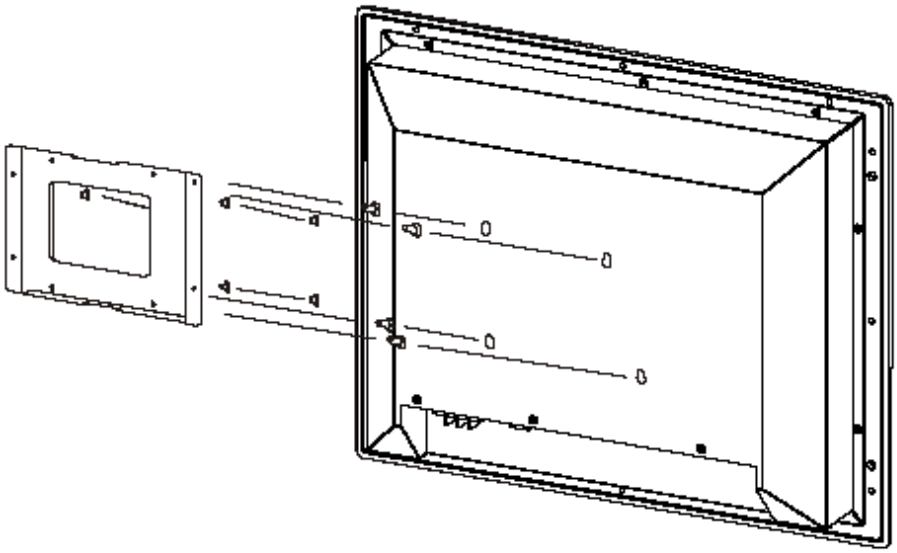
Step2. Use M4x 15mm bolts to drill through the fixture into the mounting holes on the rear side of IP65 front bezel.(The quantity of mounting screws based on drawing)



Step3. Check the finished mounting concept.



** Please Note: VESA and wall mount with mounting kit by special request.



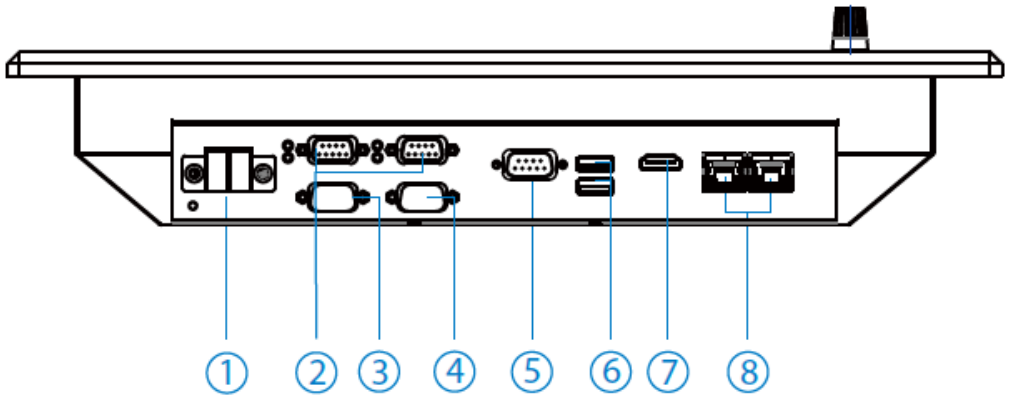
2.2 Installation Notice

2.2.1 Brightness Control Knob Precaution

The dimming brightness control knob may be damaged by wrong placement. Please make sure the right way to protect the knob.

2.2.2 Cable Connection Precaution

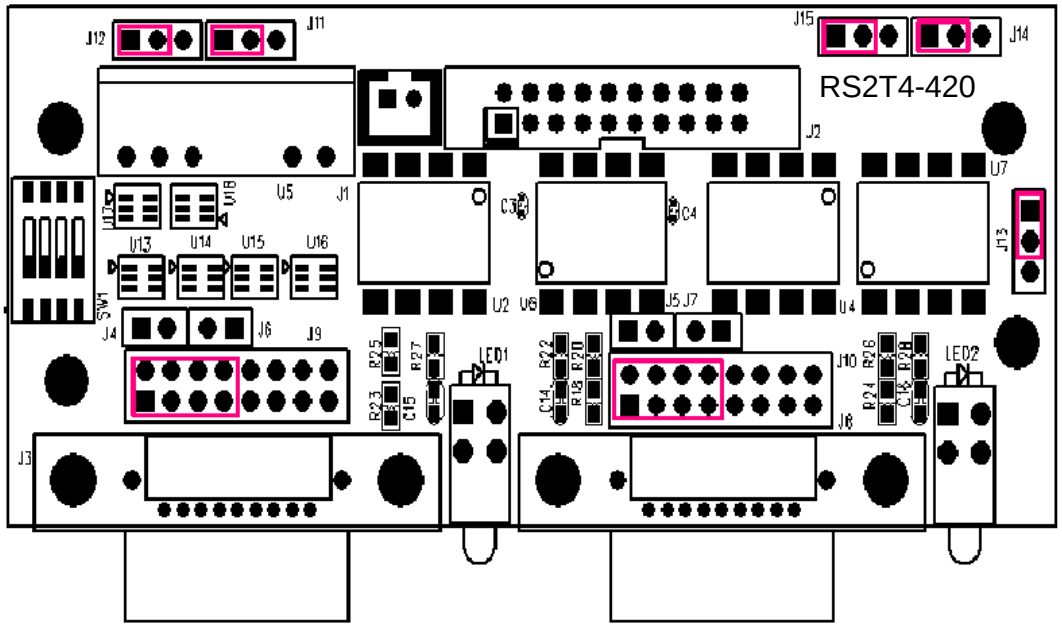
Make sure to use qualified shielded signal cable to connect to Marine products. These cables including RS232, VGA, HDMI, LAN, USB cable should be connected inside the area as marked below. For DC power connection, please make sure the power cable is tightly connected by two screws of the terminal block.



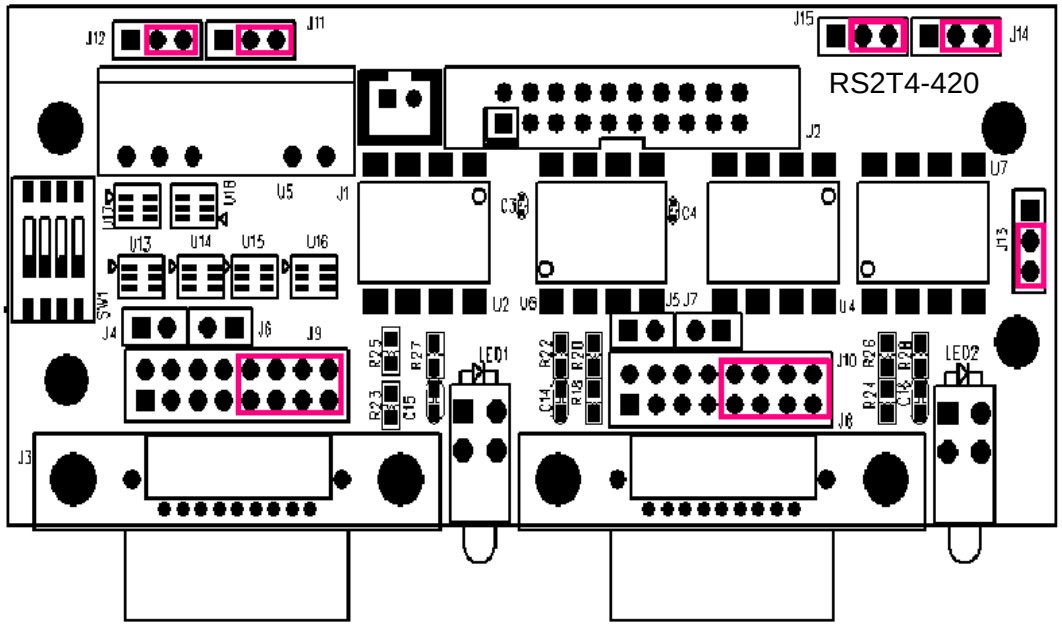
1. 1 x 9~36V DC input
2. 2 x Isolation RS422/485 (optional)
3. 1 x RS232
4. 1 x VGA output
5. 1 x RS232/422/485
6. 2 x USB3.0
7. 1 x HDMI
8. 2 x RJ45

2.2.3 Isolation RS422/485 Jumper Settings

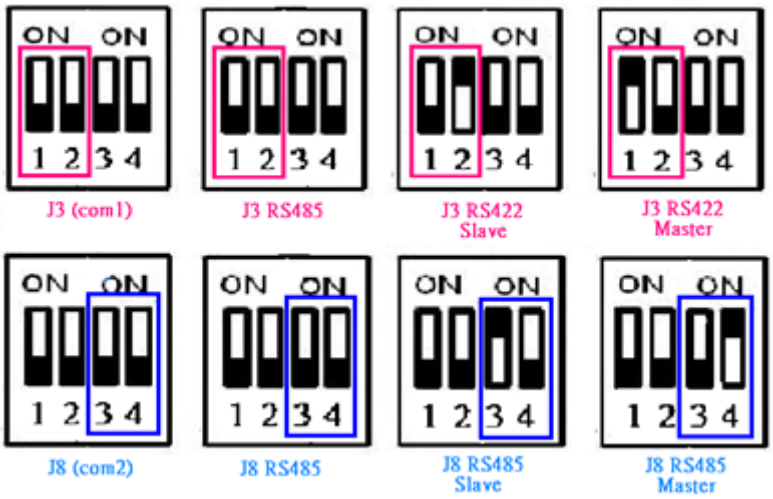
1.RS-485/RS-422



2.RS-232



SW1 (On Back side): COM3(J3) / COM4(J8) RS-422/485 Mode Switch



D-Sub 9P RS-232/RS-422/RS-485 (J3,J8)

Used connector: DB9 Female

Related connector: DB9 Male

Pin No.	Symbol	Description
1	P1	DCD/D-/TX-/RX-
2	P2	RXD/D+/TX+/RX+
3	P3	TXD/RX+/TX+
4	P4	DTR/RX-/TX-
5	GND	Ground
6	P6	DSR/NC
7	P7	RTS/NC
8	P8	CTS/NC
9	P9	RI/NC

Pins definition of J3 and J8 of 3 types

1. RS-485

Pin No.	Symbol	Description
1	P1	D-
2	P2	D+

2. RS-422 Master

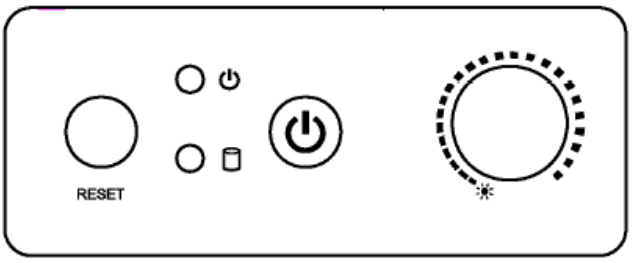
Pin No.	Symbol	Description
1	P1	TX-
2	P2	TX+
3	P3	RX+

4	P4	RX-

3. RS-422 Slave

Pin No.	Symbol	Description
1	P1	RX-
2	P2	RX+
3	P3	TX+
4	P4	TX-

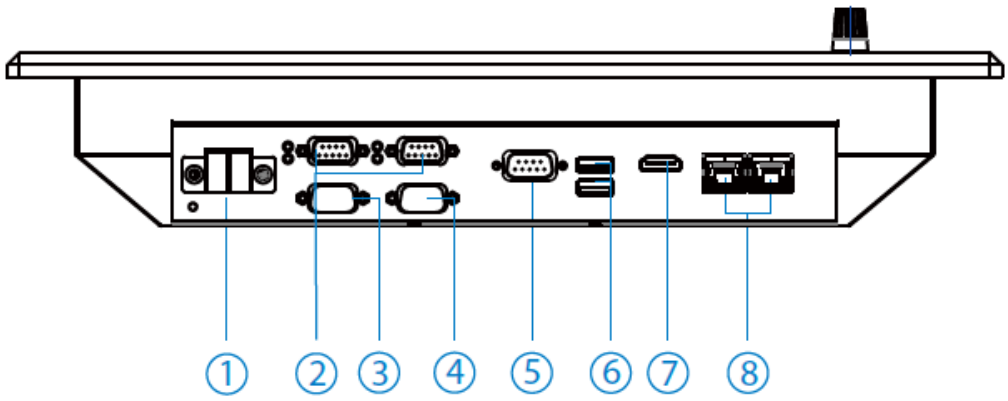
CHAPTER 3
Operation the Panel PC



Chapter 3 Operation of the Panel PC

3.1 Input / Output Signals Overview

The Marine Panel PCs design with versatile computing functions fulfilling the embedded applications. The default function include two COM ports (one for RS232 and one for RS232/422/485), one for VGA output, one for HDMI output, two for USB 3.0, two RJ45.



1. 1 x 9~36V DC input
2. 2 x Isolation RS422/485 (optional)
3. 1 x RS232
4. 1 x VGA output
5. 1 x RS232/422/485
6. 2 x USB3.0
7. 1 x HDMI
8. 2 x RJ45

Figure 3.1 Input / Output Signals

Power input (DC Version / AC Version)
Default DC terminal block power source input compact design meets the maritime application. The terminal block is to be secured that the cable to screw terminal.

AC Std 90V to 265V power input is also available for AC version option, use standard power cord to connect to the AC power inlet.

RS232 serial port for connection (COM1, COM2,COM3, COM4)
The Marine Panel PCs support four COM ports (including one for RS232/422/485 optional) to satisfy the maritime accessories sensor units. Connect Standard D-SUB 9pin connector from accessory system to connect to the Marine Panel PC to be a control center.

VGA port connection
Use D-SUB 15-pin (Female) VGA signal cable to connect to the other display for extension. Fasten cable connectors with screws.

HDMI port connection
Support HDMI A Type19-pin Female output to connect to the display.

LAN port connection
The Panel PC supports one 10/100/1000 Mbps Ethernet interface for connecting to the internet.

USB port connection
Use standard USB type A cable to connect any device that use USB interface for expansion functions.

3.2 In Front User Controls

The compact in front user control is a user-friendly interface both to control the system function and status. With a dimming VR knob the user can easily control TFT-LCD brightness according to the ambiance environment. Power and Storage status LED indicator also very clear for user to control the system situation.

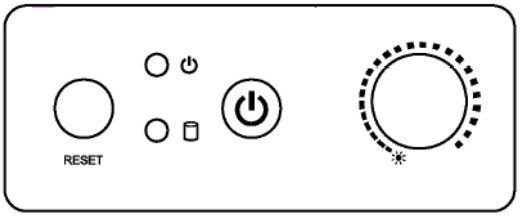


Figure 3.2 In Front User Controls (for 10.4 inch to 17inch)

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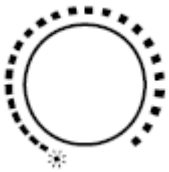


The Dimming Knob
The TFT LCD display support hyper dimming function to adjust brightness from nearly 0% to 100% via a easy to use VR knob.

Power On/ Off Button
Press the Power On/Off button to switch the system power.

Power On/Off Status LED indicator
When the system are normally turned on, the LED indicator turns to red light.

HDD Status LED indicator
When the system Hard Disk storage are normally operated (reading or writing), the LED indicator turns to the green light.

Appendix

Appendix A: Cleaning the Monitor

1. Make sure the monitor is turned off.

2. Never spray or pour any liquid directly on the screen or case.

3. Wipe the screen with a clean, soft, lint-free cloth. This removes dust and other particles.

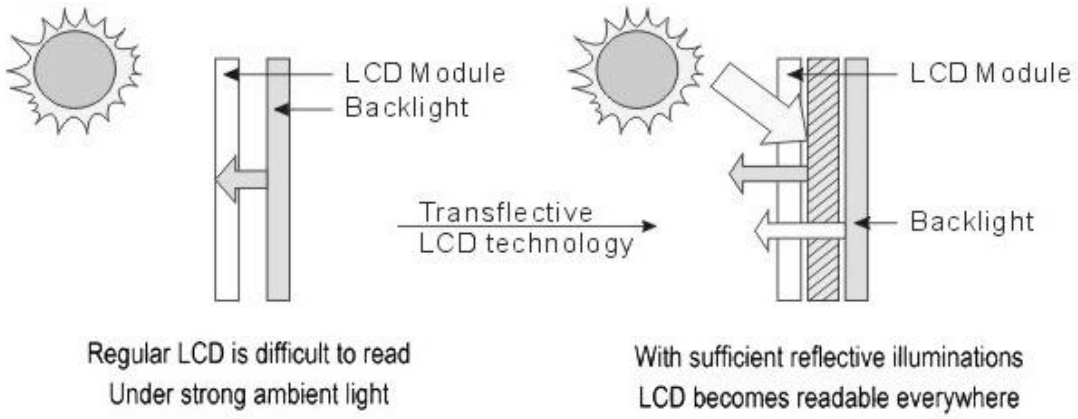
4. The display area is highly prone to scratching. Do not use ketene type material (ex. Acetone), Ethyl alcohol, toluene, ethyl acid or Methyl chloride to clear the panel. It may permanently damage the panel and void the warranty.

5. If it is still not clean enough, apply a small amount of non-ammonia, non-alcohol based glass cleaner onto a clean, soft, lint-free cloth, and wipe the screen.

6. Don’t use water or oil directly on the monitor. If droplets are allowed to drop on the monitor permanent staining or discoloration may occur.

Appendix B: Sunlight Readable (Transflective) Outdoor Readability (Optional)

Transflective LCD technology can be applied to certain selected regular TFT LCD to introduce the LCD with a reflective function. With the imposed reflective function, the modified LCD can reflect the ambient light passing the LCD cell and utilize the reflected light beams as its illumination. The stronger the ambient light is, the brighter the LCD will appear. As a result, the modified LCD is viewable under lighting conditions including direct sunlight.



The following table shows the outdoor readability for the Marine Bridge System Display models.

Outdoor Readability

Model Number	R08A83S-MRT1TR	R10A83S-MRM2TR	R15A83S-MRA1TR	R17A83S-MRA2TR	R19A83S-MRA1TR
Ambient light(nit)	10,000	10,000	10,000	10,000	10,000
	30,000	30,000	30,000	30,000	30,000
	80,000	80,000	80,000	80,000	80,000
Brightness gain (nit)	432.7	437.5	680	490	500
	620	670	870	630	630
	1,180	1,150	1,320	900	830
Reflectance(net)(%)	1.20%	1.20%	1%	0.83%	0.50%
	1.15%	1.15%	0.98%	0.70%	0.65%
	1.16%	1.10%	0.90%	0.45%	0.40%